

About

The Teach with Portals program offers free content, information and tools to help educators build innovative curricula. Games and tools are delivered through STEAM for SCHOOLS, the school-friendly version of our game distribution service.

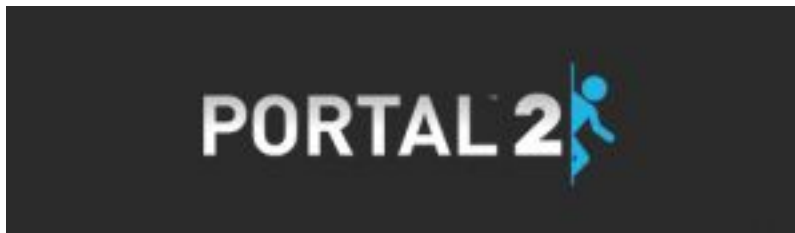
Educators can learn about and share compelling, engaging and creative content by accessing lesson plans and resources on the Teach with Portals website, and join a teachers-only community forum for peer support and problem-solving.

Become part of a movement that shares ideas, methods and experiences to teach students in profound new ways.

Tools

Teachers and their students can gain free access to these great tools and more by signing up for.

Portal 2 Puzzle Maker



A 3D game design tool by which one can create puzzles, or levels, for the game Portal 2 which is included.

Universe Sandbox



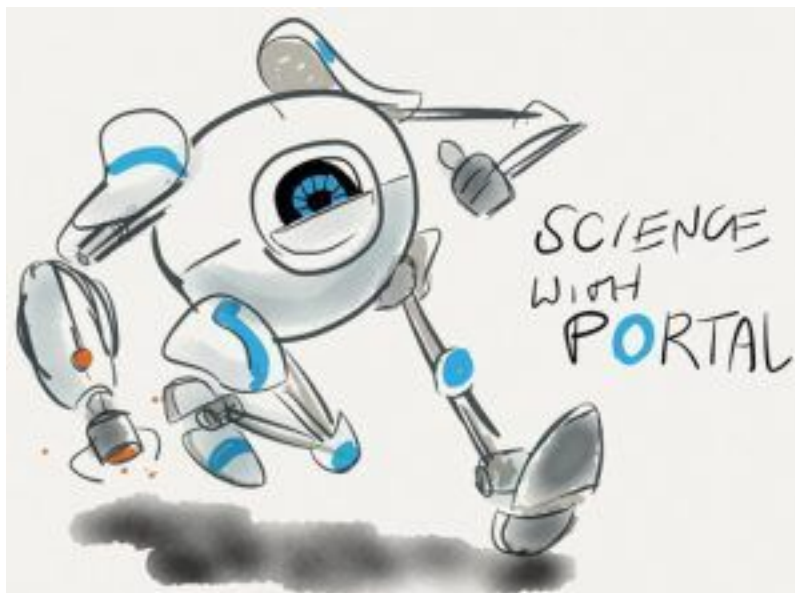
Create, build or destroy universes! The world's most realistic Universe simulator.

[More info on Universe Sandbox](#)

Blog

Feb 6, 2013

LEARN USING TECHNOLOGY



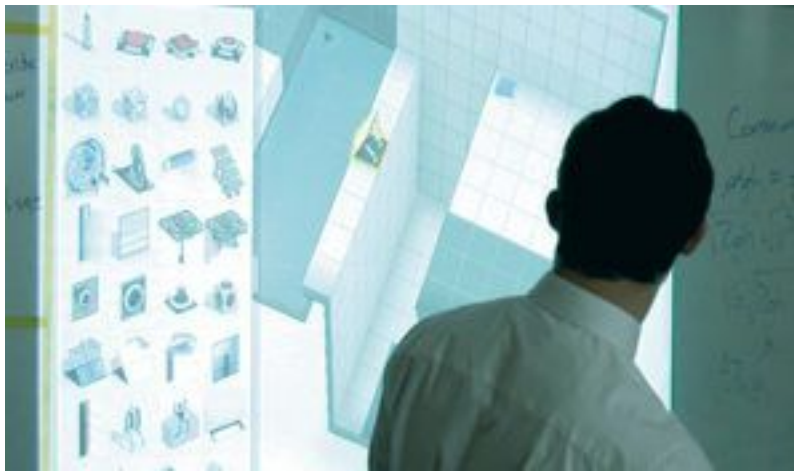
Today is National Digital Learning Day and PBS LearningMedia's new survey of teachers shows high interest: "As more educators are adopting technology for a 21st century curriculum, the accessibility of educational content on a variety of platforms is key to bringing lessons to life in classrooms."

Portal 2 brought some lessons to life last weekend at ScienceOnline2013 with a session on games for science engagement and education presented by a teacher and student. Check out selected tweets!

(Thanks Maki Naro for the doodle of Atlas made at the presentation.)

Jan 16, 2013

WEBINAR ON PORTAL 2 IN CLASSROOM



Three of our Portal 2 Puzzle Maker teachers will be interviewed Thursday, January 17 at 9 PM ET for an installment of the Gamers Advancing Meaningful Education (G.A.M.E.) webinar series. Laurence Cocco, Director of Educational Technology for the New Jersey Department of Education, will conduct the interview with Steve Isaacs (middle school game design), Lisa Castaneda (middle school math), and Cameron Pittman (high school science). Check it out!

Dec 10, 2012

FUTURE RUBE GOLDBERGS



The Teen Center for the Boys and Girls Club of Bellevue, Washington aims to teach kids technical skills while providing an outlet for creative expression. Chris Monier, their Tech Director, uses the Portal 2 Puzzle Maker to help achieve these goals, with a game design lesson plan he calls The Portal Rube Goldberg.

These teens are up to the task! After refurbishing computers with a few modest upgrades, designing complex contraptions to perform simple tasks will be a snap.

Nov 15, 2012

UNIVERSE SANDBOX – NOW AVAILABLE ON STEAM FOR SCHOOLS



Never before has Astronomy been so interactive or so much fun!

We've heard from some teachers that Universe Sandbox, which has real physics, real data, real units and real science would be great in the classroom.

STEAM for SCHOOLS now includes free access to this Astronomy software from software developer Giant Army. Using this powerful gravity simulator, teachers and students can explore and manipulate the galaxy through built-in tutorials and step-by-step activities to truly understand the universe in which we live.

Nov 13, 2012

PUZZLE MAKERS ARE PLAYMAKERS



We're proud to share that the Portal 2 Puzzle Maker is featured in the first episode of the Institute of Play's PLAYMAKERS series. The series explores the experiences and innovations that are leading the way for learning design in the twenty-first century. It aims to feature a range of organizations and their stories at the intersection of games and learning. We can't wait to see what PLAYMAKERS will teach us about the power of play in education.

You can follow the series and related articles and resources at [PLAYMAKERS](#) and [FastCompany.com](#).

Oct 25, 2012

STUDENTS ARE OUR TEACHERS



Several teams from Sammamish High School as part of the Starting Strong summer program took on the challenge of creating lesson plans for 8th and 9th graders that used the Portal 2 Puzzle Maker. Projects ranged from teaching velocity and geometry to atomic models.

Over a six day period, the students designed a plan for teaching their concept, used the Puzzle Maker to produce a lesson or series of lessons, tested and collected data from their lesson, and created a presentation of their findings and what they learned. Students reported that their work was significantly improved by the opportunity to gather peer feedback as they designed their lesson plans. Farah, a junior, was able to experience the reward of teaching, too: “Those who had no idea what Newton’s Laws were had a deep grasp of them at the end of the lesson AND they could better understand their applications in the real world.”
Now that’s teaching with portals.

Oct 18, 2012

PUZZLE MAKER EDUCATION VERSION UPDATE



We’ve released an update to the Education Version of Portal 2 based on educator feedback. It includes several new features:

Play with a new cube! The Contraption Cube has adjustable mass, friction and elasticity – perfect for experimenting with physics concepts.

The aerial faith plate can now generate an impulse with a specific amount of force and in a precise direction.

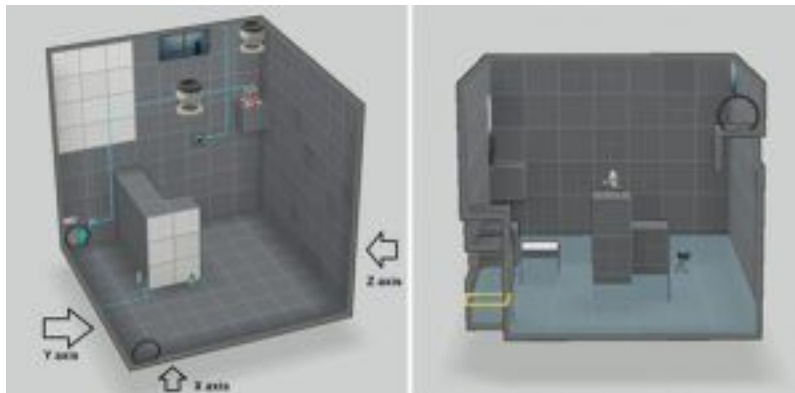
Considering time in your lessons? There’s now an in-game timer at the top of the screen along with new simulation rate adjustment controls. This allows students to see reactions more clearly and to accurately measure the position and speed of moving objects.

Here's a fun one: speech bubbles! Teachers and students can add written notes and instructions that appear in the level as it is played.

All of these new features provide for a wider variety of experiments and more opportunities to integrate math. Try these yourself by enabling them via the Options->Education menu. Check out the blog [physicswithportals](#) for a demonstration.

Oct 10, 2012

BROKEN LEVELS FIX GEOMETRIC REASONING



Lisa Castaneda, a teacher from Washington State who has written several of the math lesson plans available on our site, met Geoff Moore at the Games in Education Symposium this summer. Geoff is a 24 year-old web and game developer. As a former gifted student who struggled through school, Geoff attended the conference to find ways of using new technology to help bridge the gap between student and teacher and make education more interesting and engaging.

Lisa and Geoff got to talking and brainstormed a lesson plan where students use geometric reasoning skills to “fix” Portal 2 Puzzle Maker levels that aren’t quite playable as-is. Students must work within various constraints to recreate, then modify the design of these levels so a player can successfully reach the exit. There are multiple paths to success, allowing for creativity and discovery. Here’s their take on engaging Eighth Graders in mathematical practices and geometric principles with The Broken Rooms.

Aug 22, 2012

SUMMER ENRICHMENT



The Aperture Science Enrichment Center is just one of many labs where enrichment has been taking place this August. Welcome to Elizabeth, Pennsylvania, where the Elizabeth Forward School District recently held a Portal 2 Challenge as part of their summer enrichment program for students in grades 4 through 8.

As part of the program, students learned about game design, created levels with the Portal 2 Puzzle Maker, and then tested their creations for one another. Check out this handy level evaluation worksheet for Portal 2 puzzle testers, created and used as part of the schools' Portal 2 Challenge program.

According to Dr. Todd E. Keruskin, Assistant Superintendent, this popular summer Entertainment Technology Academy is part of the district's transformation into an exciting and creative learning environment, where STEM plus the Arts (STEAM!) give students not only the skills, but also the creativity they'll need to thrive in the global digital workplace.

Dr. Keruskin mentions collaboration in particular, as an important element that's flourishing through the program. "Game-based learning has helped students collaborate with each other," according to Todd. "Student programmers, student artists, and creative writers are creating apps and games together in teams. Students are starting to see the relevance of learning and are excited again!"

(Photos L to R: Beginning the day by crawling through Portals; level designers at work; Heather Hibner, Entertainment Technology Academy Teacher & Michael Routh, Middle School Principal)

Jul 24, 2012

IN AND OUT OF PORTALS



Scott Hawley, PhD, is a professor of physics at Belmont University, where he leads their Society of Physics Students (that's him to the far right in group photo). The group recently outlined the

Physics of Portal 2, using the game to demonstrate a variety of physics principles. Oscillatory motion is covered at the 12:22 mark, where a student named Austin walks us through simple harmonic motion and Hooke's Law of elasticity.

As Austin explains, in Portal 2, oscillating objects adhere to a slightly different set of laws, where force is constantly being reoriented, and where the amplitude and frequency of an oscillation are dependent upon one another. The result? Perpetual oscillation! High falls are converted to high jumps when objects are propelled upward from a portal, making things more... interesting.

Scott's written up two great lesson plans for high school students about Portal "Bouncing" and Oscillations and Simple Harmonic Motion and Hooke's Law. Scott's lessons show students how to compare and contrast oscillation behavior as it adheres to the game world's laws of physics versus those of our own. So grab your stopwatch and some graph paper, and bounce on in.

Jul 12, 2012

STATS AND SCAVENGER HUNTS



Lisa Castaneda is a math teacher of grades 5-8 in Washington State, and our primary math lesson plan contributor. (We're a big fan.) Lisa is at it again with two new lesson plans focused on geometry and statistics.

Geometry Scavenger Hunt has 4th and 5th graders finding, placing and describing objects to demonstrate their understanding of geometry.

Forget Aperture, this is MY test chamber shows 6th grade students how statistics can be used to answer questions about gameplay and game design. We love this lesson plan because it leverages the process we use when designing our own games at Valve, collecting real data about gameplay to inform game design decisions. Students will posit a question, collect and analyze data, and present their findings. Data FTW!

Jul 5, 2012

SETTING, CHARACTER, PLOT



Portal 2 won several “Best Narrative” awards, but like any game design element, its story always has room for improvement. What will your students think of the Portal 2 story line? David Hunter, a middle school English teacher in Bellevue, WA, inspires his students to perform literary analysis using video games. Check out his 7th grade Literary Analysis lesson plan.

Jun 27, 2012

PHYSICS WITH PORTALS



Remember that dynamic physics teacher The New York Times shared musings of in its review of Portal 2? Meet Cameron Pittman. Cameron is already at work, becoming that important science teacher in Nashville, Tennessee, where he teaches High School Physics and authors many Teach with Portals physics lesson plans.

For a look at what he’s created, visit Cameron’s blog, Physics with Portals, where he shares the demonstrations he’s made by capturing video within the Portal 2 Puzzle Maker.

Inspired? We are! Sign up for the Portal 2 Puzzle Maker Education Beta, and start making educational demonstrations of your very own.

Jun 14, 2012

WELCOME TO TEACH WITH PORTALS!



Valve recently began collaborating with educators to develop game-related teaching tools that revolve around STEM (science, technology, engineering and math) education. We've created Teach With Portals as a destination for this partnership, providing free content and game design tools, as well as an interactive community for exchanging lessons and experiences.

Welcome to the new, free educational collection of puzzles and teacher-created content from Valve's best-selling game, Portal 2, an engaging 3D puzzle-solving game. Based on Valve's technology, the Portal 2 Puzzle Maker takes place in an environment with realistic physics – a playground rich with opportunities for educational fun.

We understand that learning is not fulfilled by a one-size-fits-all approach, so we're engaging with a community of educators, parents and students to create infinite possibilities for learning. The educational version of our Puzzle Maker empowers students and educators to craft unique puzzles, explore worlds, and share custom lesson plans. Teachers can also simply leverage other contributor's shared lessons, selecting among the best of them to suit their learners' needs.

"Somewhere out there an innovative, dynamic high school physics teacher will use Portal 2 as the linchpin of an entire series of lessons and will immediately become the most important science teacher those lucky students have ever had. For those of us who have left school behind, Portal 2 is one of the finest brain games around." The New York Times, May 10, 2011. Get started with Portal 2 and the Puzzle Maker and download a copy to try out this summer. By signing up, educators also gain access to the Valve Education forum, where teachers from around the world share insights and advice on effective uses of video game technology in the classroom.

News

The expansion of this educational program is currently on hold. Steam for Schools is no longer available for download.

Valve presents Teach with Portals at 9th Annual Games for Change Festival

[Watch the Video](#)

“To this day, Portal stands out as the most masterful example of invisibly intuitive teaching I’ve ever discovered”

[Rock, Paper, Shotgun](#)

“Somewhere out there an innovative, dynamic high school physics teacher will use Portal 2 as the linchpin of an entire series of lessons and will immediately become the most important science teacher those lucky students have ever had. For those of us who have left school behind, Portal 2 is one of the finest brain games around.”

[The New York Times](#)

“Learning about momentum in this context is much more relevant because it directly affects the virtual world they are building rooms in, far superior than trying to help students understand a car’s momentum when most of them are too young to drive.”

[Singularity Hub](#)

“...there’s one series that very clearly encourages critical thinking and problem solving skills across all age groups: Portal.”

[Forbes](#)

“Gamification is a hot buzzword in education, and it is refreshing to see the reverse use case – an educational layer being added to an established game.”

[EdLab Teachers College Columbia University](#)

Frequently Asked Questions

1. What is Steam?
2. Steam is a free online service that lets users download games (some free) and communicate with other players. Steam is used by tens of millions of gamers worldwide.
- 3.
4. What is STEAM for SCHOOLS?
5. STEAM for SCHOOLS is the educational version of Steam, specially designed for use by teachers and students in a school, afterschool or summer program setting (site). All functionality that isn't core to the education experience – our Store, News and Community – has been disabled in this special version of Steam. STEAM for SCHOOLS includes access to Portal 2 and the Portal 2 Puzzle Maker.
- 6.
7. Is there any cost for STEAM for SCHOOLS?
8. STEAM for SCHOOLS is provided free for educational purposes, along with select Valve games and tools.
- 9.
10. What is the Portal 2 Puzzle Maker?
11. The Portal 2 Puzzle Maker is a 3D game design tool by which one can create puzzles, or levels, of the game Portal 2.
- 12.
13. What are Portal and Portal2?
14. Portal and Portal 2 are non-violent, cleverly written games that challenge players to solve puzzles within a three-dimensional world. Student players must maneuver objects and themselves through the world in order to solve the puzzles and progress from one level to the next. The game features Chell, the player-controlled female protagonist, and GLaDOS (short for Genetic Lifeform and Disk Operating System), a computer artificial intelligence that monitors and directs the player.
- 15.
16. Players primarily interact with the world by using a hand-held portal device to place interconnected portals on walls, floors, or ceilings. Once a pair of portals is positioned any object entering through one portal will exit through the other.
- 17.
18. The game takes place in the Enrichment Center for Aperture Laboratories—also known as Aperture Science—which is the fictional corporation responsible for creating the portal device.
- 19.
20. The Portal games were created using a physics engine, which is computer software that simulates real world physics.
- 21.

22. Are Portal and Portal 2 Age Appropriate For My Class?
23. Anyone from age 2 to 70 and beyond can play and enjoy Portal. The games appeal to both boys and girls and prior gaming experience is not necessary. Portal got a Teen rating from the Entertainment Software Ratings Board (ESRB); Portal 2 is rated Everyone 10+.
- 24.
25. How Can I Use Portal or Portal 2 As Part of My Curriculum?
26. The Portal franchise was developed as an entertainment product, but the games have the potential to be used as experiential learning tools.
- 27.
28. In the Portal world, students interact with physically simulated objects (cubes, catapults, lasers, etc.). The interaction tends to be free-form and experimental and as students encounter new tools and challenges they may develop an intuitive understanding of physical principles such as mass and weight, acceleration, momentum, gravity, and energy. The games also put a premium on critical thinking, spatial reasoning, problem solving, iteration and collaboration skills, and encourage overall inquiry into STEM (Science, Technology, Engineering, Math) learning.
- 29.
30. foundry10 offers free resources for teachers and provides a community where educators can share curricula, lessons and classroom experiences by registering as part of a forum solely for educators.
- 31.
32. Installing STEAM for SCHOOLS?
33. Steam for Schools is no longer available for download.
- 34.
35. Assigning usernames and passwords to students
36. Teachers will receive the requested number of subscriptions in the form of anonymous user names. The passwords are randomly generated. Teachers should not distribute the passwords to students so as to ensure the integrity of STEAM for SCHOOLS.
- 37.
38. Setting up Portal and Portal 2 in the classroom
39. STEAM for SCHOOLS, Portal and Portal 2 can be run on either PCs or Macs. Below are the exact specifications but as a rule of thumb most computers made after 2008 should be able to run the game.
40. PC System Requirements:
 - OS: Windows 7 / Vista / XP
 - Processor: 3.0 GHz P4, Dual Core 2.0 (or higher) or AMD64X2 (or higher)
 - Memory: 1GB XP / 2GB Vista
 - Hard Disk Space: At least 7.6 GB of Space
 - Video: Video card must be 128 MB or more and should be a DirectX 9-compatible with support for Pixel Shader 2.0b (ATI Radeon X800 or higher / NVIDIA GeForce 7600 or higher / Intel HD Graphics 2000 or higher).
 - Audio: DirectX 9.0c compatible

41. Mac System Requirements:

- Processor: Intel Core Duo Processor (2GHz or better)
- Memory: 2GB
- Hard Disk Space: At least 7.6 GB of Space
- Input: A two button mouse is strongly recommended
- Video: ATI Radeon 2400 or higher / NVIDIA 8600M or higher / Intel HD Graphics 3000